Fw: The Ogdoad

The Ogdoad

Yes, the Ancient Egyptians could have and did in-fact deduce that sexual reproduction must occur via some kind of genetic crossover + recombination. And they invented writing while doing so.

"M", Tristan-Gan MIANO
Apr 2

Many thanks - huge thanks - to Wikipedia and its army of semi-anonymous editors who demand no thanks from anyone in their stalwart effort to preserve our most fundamental conceptual, written, and widely accessible cultural knowledge. Without which, civilization itself would be at risk. The following link is an example which provides strong evidence for the overall quality of that effort, and I mean no hyperbole when I say the presence of this article has made our civilization significantly less at-risk than it would be otherwise: https://en.wikipedia.org/wiki/Ogdoad_(Egyptian).

How so? Be patient, bear with me and you'll understand.

The Ogdoad turns out to be surprisingly simple to reconstruct from nothing more than common-sense, freely-motivated questions that would very likely have been asked by cusp-of-civilization humans, at least some of whom - we may safely assume - possessed enough logico-deductive reasoning capability which, while definitely nothing to scoff at, *we nevertheless happily note that said assumption provides with itself a high degree of certainty in its own veracity. We know that this level of cognitive capability - assuming such a concept holds as a meaningfully consistent and useful one - had to have been possessed by at least some human beings at the time in which modern writing exist(s/ed) all the way back to the point just immediately before it was invented.* [1]

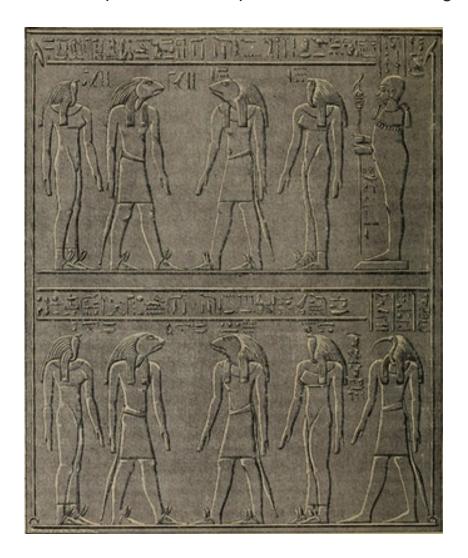## How the hell are babies made?

Yes, this would have been asked at some point, and I can tell you from personal experience that this question was most assuredly no higher than at most **secondary** in primacy in the mind of the young man pondering this question. Primary, in the mind of that man, was of course the question, "**How the hell do *I* get laid?**" And yet, sitting there not getting laid for long enough, at a certain point, (and even more likely to happen if he were also the quiet intellectual type), he would have probably derived the equations for sexual reproduction long, long before he personally saw any action himself. [2]

Before I type out my derivation, which resembles a common style of math proofs known as "Proof by Induction", I want to take note of the hieroglyphs we still have available and referred to as "The Ogdoad", which is a work credited to the Ancient Egyptians (and specifically Thoth[3], the individual male

Egyptian acknowledged by the hieroglyphic-record as personally having discovered writing):

First of two Wikipedia-based representations of The Ogdoad.

I could be a dick and be like "Can we assume this is the second of two? Har-har-har. ;P"

Knowing nothing about how or when either of these representations were produced, I'd say they both carry enough information to represent the concept sufficiently. Although, I do prefer the first one over the second. Yes, color is part of the reason for my preference. But it also has the dividing lines which clearly show eight distinct individuals, with four clearly female and four clearly male, and all reasonably inferred to show generic, arbitrary, unnamed, hypothetical individuals who differ only by arbitrary, yet easy-to-define (within the scope of the author's and audience's pre-existing shared spoken language) attributes / characteristics / traits.

And, even better, each of the eight "archetypes" in the upper image carry with them in the upper-right of their bounding-boxes a simple-glyph-based description of some kind. These are likely the attributes possessed by each archetype described by strings of simple glyphs (and presumably, depicted as faithfully as possible in the figure). Very important. Number one is the clear victor here.

(I highly doubt either of these were Thoth's original drawing(s), if any such still exist, and I think he likely produced many instances himself for the sole purpose of teaching others how to make them on their own).

All I will state about the hieroglyphic representation of the Ogdoad is the following, but I emphasize that I have yet to make sufficiently solid arguments for these yet, and hopefully, it should not require me to tell that to you if you're an astute reader. The arguments, should, if I successfully produce them and state them clearly enough later in this article, serve to prove these to a reasonable level of certainty to the average reader.

1. Each figure serves as a **variable**, i.e., a generic male-or-female person, not assumed to point to any real person in particular, but may be said to possess certain properties / characteristics, of an arbitrary author-determined nature. Each of the eight represent one out of at least eight possible offspring types of a given male and female parent pair. Two of the eight are copies of the parents (clones).

2. The frog-headed figures are males (because tadpoles look like sperm and vice-versa), and the snake-headed figures are females (because women constantly call other women snakes, but never refer to themselves as snakes). Yes, these are likely both stereotype-jokes, because this is about the birds-and-the-bees and naturally will require a light-hearted but intentionally semi-offensive tone.

3. The accompanying simple-glyph sequences (i.e. text, just like this text) *encode attributes* of that person, but are **not assumed to accurately describe, nor make a serious attempt to explain,** how anything is actually encoded in physical reality, nor describe any such mechanisms which take the encoding and produce the corresponding output. (It turns out you don't even have to know those details, to conclude these claims here, remarkably!)

4. Eight is not the maximum possible potential offspring types those parents could have, but serves as the minimum necessary to complete the argument (as we shall see).

5. **Most profoundly, we can infer far more than one would expect about the mechanism(s) which produce the output encoding(s) from the parents': It is, amazingly, exactly <u>this</u>! And without knowing any of the modern empirically-confirmed details of this process e.g., protein base-pairs, ribosomes, DNA, the double-helix structure, molecules, cells, or any of that! You can still get** *recombination* **and** *genetics* **and not have this empirically confirmed until thousands of years later, and yet you'd still be able**

to obtain the truth with confidence that eventually it would be empirically confirmed.

6. The key discovery Thoth made is that smaller simple glyphs, e.g. like our Latin alphabet and Arabic numerals, can be composed and concatenated - into words and sentences -to represent a higher-level concept, which in turn, may also have a larger, more complex and sophisticated (but single) glyph representation as well. These can also be composed or concatenated into an even higher level hieroglyph, of which "The Ogdoad" itself serves as the final completed example of the highest-level hieroglyph representing the given concept, and which finishes the argument with poetic beauty as well as full logical completion.

7. All of that sounds amazing except for one huge, glaring missing component: An explanation given either verbally or as a text-based (i.e. given as a long sequence of simple glyphs, such as this article) explanation that can be used to understand the entire piece by anyone, since it is typically assumed that if you are there to learn hieroglyphs than you will start with a spoken, verbal language as a base, initially. We don't appear to have those accompanying the hieroglyphs found in archeological sites, it appears. More worryingly, this explanation I'm giving here does not appear to accompany official, academic writing on the topic (and I'm not being cartoonishly arrogant here. It's not extremely difficult to make the arguments I'm making here, and I feel confident others can verify that what I'm saying here makes sense).[4]

Now, let's start with these assumptions:

We take an arbitrary male and female (human, but that isn't necessary for the argument, just for the ease of understanding), who are assumed to be sexually reproducing together, and wondering about what their children could be like.

They know that children tend to be, and commonly appear to be, mixtures of their parents in some way, and yet each child is never exactly like either of the parents, even though they do have twin+'s sometimes.

The parents have some measure of attributes they can describe in their partner that they like, are attracted to, and may / may not hope get passed down to their children. Like hair color, or hair texture, or hair straightness, or hair density, or hair etc. etc. (I think hair would likely cover quite a few of the firsts on their list of attributes).

They would know that Male or Female would certainly be a core, binary-valued attribute, but that there are many attributes shared by both men and women, and thus would be described separately in the encoding of a person.

Presumably, they are also aware of "different species" of sexually-reproducing animals as well as "different human races" that they don't at all or very rarely reproduce with, respectively, and so, would likely have *very* different encodings of their attributes from their own. So they can infer that theirs and those of their parter will be *mostly* similar, and have a large portion which is *shared*, perhaps, say, skin-color, or being dark-haired, or liking the same kind of music, or perhaps just being "Egyptian" and speaking their language in general. Yet, they also take as a given that animals and other races reproduce sexually by the same mechanism.

The "encoding" will consist of a string of undefined length, consisting of elements from a small set of simple glyphs.

Binary encodings like 01100101011110 … 010101 work perfectly well, but it doesn't change a thing if I said they were made of capital letters like ABHDHDGFYET… and so on. In fact, since this is 2021 and I'm typing this into a computer, I'm going to use binary to represent the encodings just like a computer does at the lowest-level of representation. Computers are an excellent technology that makes this so much easier for us to grasp this whole thing, but it isn't necessary to understand this argument at all. Just a

convenience. The Egyptians didn't have them and obviously the discovery of writing necessarily happens before computers are invented.

The important thing to note is that binary like 0110101 can be used to encode basically anything at all. The only limiting factor is how many digits are needed, but all you need to do is add more. 1 digit gets you two symbols, like true or false, or on / off, but two digits get you four, including the previous two. Three digits gets you eight symbols, including the previous four, and so on and so forth ad infinitum.

So I can get the alphabet, capital and lowercase, the ten numeric symbols, and most of the other keyboard-symbols in just four binary digits, with some room to spare. That's not bad at all! I can get basically all glyphs ever invented by any human civilization with eight bits per glyph. That's incredible.

2d pictures? Well, that's another story…but whatever machine you are using to read this, and certainly the one I am using right now, is capable of making them from binary encodings, somehow.[5]

Donald Knuth understood how it could be done. John H. Conway understood how. Probably Feynman too, to some extent, I imagine. But none can call themselves "Thoths" until they have also provided the lay-person-level understanding, which is what yields the ability for the technology to never be "lost" for good, since we can always in principle return to an earlier step to reconstruct the knowledge and tools necessary to progress to the subsequent step.

Wolfram is probably close, but he likely won't provide the laymen's understanding, and he has the same inherent need to make his discoveries overly-cryptic as most do, which prevents that knowledge from being safely "set-in-stone" as something we can feel a measure of calm about being unlikely to lose, in the case of major societal instability or existential risk-type scenarios.

It needs to be easy to build up from first principles.

Intel *forgot* how. They **forgot**. Never forget that they forgot! Last of all they, especially if they ever come to successfully remember all of what they once knew!

Now let's return to our reproductively-engaged man and woman pair.

So now let's for the sake of argument, assume no more than an arbitrary number of binary digits, say "N", are needed to encode the male and all his glorious physical and mental attributes. 00110101010000010101….0010101 (N digits).

Likewise, the female has her own, amounting to "M" digits.

N and M are variables just like each of the eight members of the Ogdoad, but they hold nothing more than two different unspecified numbers.

All I am going to assume - sue me if you don't like it - is that N > M. The man's encoding is longer. Obviously it's longer.

Ok. Boom, we can instantly deduce that if that's true, then the extra digits - amounting to N - M digits, at least one but perhaps more, appended to the end of his encoding, means nothing more than "is a man." Wow, he thought he would get way more than that, didn't he?

Ok. So suppose we just cut that "man" portion off from his encoding, and let's call that extra sequence he has "Y" for not-so-subtle obvious reasons.

So both he and her are left with two M-length sequences, now equivalent in length, but assumed to differ at various places.

So in total we have this collection of segments: { X_m, X_f, Y}.

We can arrange these to get the following valid encodings for hypothetical children:

{X_m (female), X_f (female), X_m + Y (male), X_f + Y (male)} a total of four potential offspring, two female and two male.

But these aren't interesting nor do they give us what we want, yet. We only get clones of the parents, and dad with a vagina and mom with a penis. So, we need more variety than that still.

But, if we were able to split an encoding earlier to get the Y, then we should be able to keep splitting more, if we wanted to. We never said there were limitations on how many cuts + re-combining them in different ways we were allowed to do. Not yet, anyway.

So let's say we want to make a new X, somehow using the two parent X's, but we've yet to come up with intuitively plausible ways this could happen.

Well, remember we could always compare them by lining them up next to each other like so:

0110**1**01010101010100**00**0010101011**1**1000011110 (Man's X)

0110**00**10101010101011001010101011**0**1000011111 (Woman's X, also her whole encoding).

If you squint and eyeball them both very closely, you might be able to spot that there are only a handful of locations where there is a difference between them.

Now, the only options I can come up with are the following:

1. For each new X, just copy the identical regions, and then for each bit that differs, randomly coin-flip for either 0 or 1.
2. Slide across both encodings and keep a running tally of the total number of mis-matches encountered so far. Then do this again. On the second run, once >= half of the total mis-matches have been counted, slice both X's in half in that exact position, to produce an X_left and X_right for both the male and female.

Let's leave 1 alone for now, because the split-method in number 2 is what we mainly care about for now. If the two X's actually differed in big, continuous regions of digits, number 1 might prove to be very problematic, because that might indicate that lots of bits which are next to each other are correlated in some way, which the random bit-flipping does not preserve. So let's stick to 2.

So now our segment-collection has become this: {X_m_left, X_m_right, X_f_left, X_f_right, Y}.

So, not including the clone-segments X_m and X_f (which are equal to X_m_left + X_m_right and X_f_left + X_f_right, respectively), we have:

{X_m_left + X_f_right (x2 for M and F), X_f_left + X_m_right (x2 for M and F)}, so four new potential offspring, now fully unique compared to their parents.

Now, including the four previous ones, which had a copy of X from one parent, plus either a Y or no Y, we've got our eight!

So, to be extra pedantic:

The parents are:

- X_m + Y (dad) and X_f (mom).

The eight possible kids are:

- X_m (girl) and X_m + Y (dad-clone boy)
- X_f (mom-clone girl) and X_f + Y (boy)
- X_fm (girl) and X_fm + Y (boy) (for X_f_left + X_m_right)
- X_mf (girl) and X_mf + Y (boy) (for X_m_left + X_f_right).

So - I count eight here. Are we done?

We could keep going performing an identical split-recombine process recursively, if we so desired, for as many times as the length of the encoding (originally dependent on the length of X, which was never explicitly given) would allow for. This would give us far more than eight (squaring the total number each time), but we don't need to keep writing these out anymore. Which is why eight is the natural place to finish the explanation! It's a type of proof-by-induction. We also know that it must stop somewhere, it can't recursively split forever, but that it must at least be done this far, to get us to eight.

We could also allow for a complicated and long Y. But the problem is, it can't do this split-recombine process, because the female doesn't have a Y. So maybe Y only changes via a random, rare process akin to bit-flipping. And assuming it belonged to the male did nothing special for the argument: We could have assumed the female had it, but we'd still come out with eight possible children just like we have.

So let's pause and reflect on what we've accomplished.

On the one hand, very little! All I've done is derive a fairly simple algorithm which could be written down in a computer program to simulate biological evolution, and likely wouldn't produce anything interesting for a long, long time, not until I understood how attributes were actually mapped to encodings, and physically instantiated in an organism's body, which we haven't done at all yet.

On the other hand:

Hold on a minute here. What? You can deduce the fact that sexual reproduction will necessarily require the use of string-based low-level encodings of each parent organism and that it produces new encodings for children via cross-over / recombination, and all of that follows logically from nothing other than simple assumptions which require no more than to be capable of conceptual symbolic reasoning? Huh? I don't need to know anything at all about cell-biology, chemistry, molecules, the atomic composition of matter, nor have tools such as microscopes or Petri dishes to learn that?

Why is that not written down or taught ANYWHERE?

Look, I've gotta exclaim some exclamations a bit here, because, we don't get only what I just described - which is a huge deal in-and-of-itself. We also get *writing. Writing with hieroglyphics.*

Yeah. We do, because that's precisely what variable assignment is: Just by mere virtue of the fact that I could say something like: 00 = 0, 01=1, 10=2, 11=3, or, 0000=A, 0001=B, 0010=C, 0011=D, and so on, and furthermore, that you can invent a new shape, drawn into the mud, sand, or carved into rock, and perhaps painted or colorized, and then combined with other symbols, pictures or glyphs to make a bigger one - just conceptually being able to understand that is enough for getting to know how sexual reproduction works with basic genetics thrown in, as well as enough to be able to create a full system of writing replete with simple glyphs, hieroglyphs, and higher-hieroglyphs, and so on.

So again, please show me I'm mistakenly led to confusion about that fundamental concept not being written down or taught ANYWHERE, as far as I can tell.

Besides the Ogdoad hieroglyph itself, which we unfortunately don't get with the text form accompanying it to explain it like this one but in Ancient Egyptian regular glyph-text (which was probably written in Ancient Hebrew if it was written on paper at all, which unfortunately wasn't designed for the native spoken tongue of the Egyptians, but they obviously were big fans of the technology). Maybe that hints at a potential reason - for the first time, at least).

That story is another story - Mithra's story - but this story is merely chapter 1 of Thoth's story.

Can I end Chapter One here? Does the impact hit you as hard as I felt it the first time? Should it? I'm going to end this entry here regardless. If you, dear reader, suspect I've left any gaping holes in my reasoning, or made tragic, hilarious errors worthy of ridicule, I very much encourage and welcome it from you and anyone else in the comments.

This post will be kept open indefinitely for comments and will also remain a free, publicly viewable post.

1
Ah, another statement that naturally provides an example of the very class of objects which it describes. Keep an eye out for those! Those are very important!

2
And whether he got any as a consequence of successfully deriving those equations remains - to this day - "still very much up in the air."

3
The very first Thoth. We'll get into the details of the existence of other Thoth(s) who were / are a sequence of distinct people - who lived one after the other, separated by long time spans and never lived concurrently with one another - another day. Here I refer only to Thoth the First, who was just called Thoth and was likely just a regular guy (albeit definitely shy and nerdy, we

can infer), until one day when he wasn't "regular" any longer. Trust me, I couldn't be more eager to tell his story a zillion times over.

4

We'll leave number six as a question that I haven't answered yet, and seems much more difficult to find intuitive hypotheses for relative to the difficulty of finding solid arguments in support of the previous five statements. As yet, it remains a mystery. But one I am dedicated to solving…

5

Yes - Adobe, Inc. and Apple Inc. together have long made their hidden methods for construction of 2D pictorial representations, compiled from machine code - and who gets to decide who is even allowed to know how it can be done *in general* - a very politically contentious topic and minefield legally, unfortunately. Hopefully that situation will sort itself out very soon. For quite a long time they possessed unquestioned dominance and institutional authority over that technology. Until… quite recently, that is. Quite recently indeed.

♡ ⚪ ⬆

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